

ABSTRACT OF THE DISCLOSURE

[0031] Castable matching layers having a desired acoustic impedance are formed with hafnium compounds. For example, a low sound velocity matching layer with an acoustic impedance of about 5 MRayl is formed by mixing hafnia (HfO_2) powder with a casting resin. The matching layer is used for low frequency operation, such as operation at four or fewer megahertz, while providing a matching layer with a thickness of 150 microns or less for easy dicing. Since a maximum dicing blade exposure to blade thickness ratio is about 30 to 1, higher velocity matching layers may lead to dicing depths requiring thicker dicing blades. By using hafnium compounds, a lesser thickness may be provided, avoiding a reduction in sensitivity and mechanical stability due to wider kerfs resulting from thicker dicing blades. Other thicknesses, frequencies, acoustic impedances or other characteristics may be provided.